

National Commission for Stratigraphy Belgium

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2.1.1.1.1. Brasschaat Member

Paleogene-Neogene

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Authors: Frieda Bogemans & Timothy Lanckacker (2014).

Description:

Is a grey sandy complex of which the grain size distribution of the sand fraction ranges from very fine to medium fine sand. Medium sand is sporadically observed in a basal position. Mud (silt and/or clay – the latter is dominant) is present as layers and/or laminae, the thicker units are massive bedded, the fine ones show flasers or wavy bedding. Micas and glauconite are common, as well as vegetation remains, peaty spots, peat lumps and wood fragments.

The sand deposits are both massive bedded and/or stratified. The stratification varies from horizontal to low-angle and planar cross stratification. The mud layers are massive or lenticular bedded. Several types of deformation structures like water escape structures, load casts and ball and pillows are present. Less common are bioturbations.

The Brasschaat Member consists of various depositional facies:

- An almost pure sand accumulation that may attain a thickness of 20m (example 17W289 (DOV kb8d17w-B91), coordinates: x = 178.088, 226.240).
- A composite unit with a predominance of sand with mud intercalations (layers, continuous and discontinuous laminae) (example 17W282 (DOV kb8d17w-B87), coordinates: x = 181.357, 222.927)
- Less common, brown clay deposits usually inclosing vegetation and wood remains. This part is calcareous. (example 17E342 (DOV kb8d17e-B91), coordinates: x = 188.070, y = 227.425).

Stratigraphic position: The Brasschaat Member is the lowermost Member of the Malle Formation, and lays on top of the Merksplas Formation or when absent on the Neogene deposits. It is either superimposed by the Vosselaar Member, which is also part of the Malle Formation, or by the Weelde Formation.

Stratotype: see various depositional facies.

Area: The northern Campine area. The river Scheldt marks the western extension of the Brasschaat Member. The southern outcropping zone reaches from the (northern parts of the) Antwerp harbour towards Turnhout. In the east the member is delimited by the Mol Formation, the exact location of this transition is yet somewhat unclear, but the Brasschaat Member is in any case not recognized eastwards of Mol. Figure 1 gives an overview of geographical distribution of the Brasschaat Member and the Merksplas Formation.

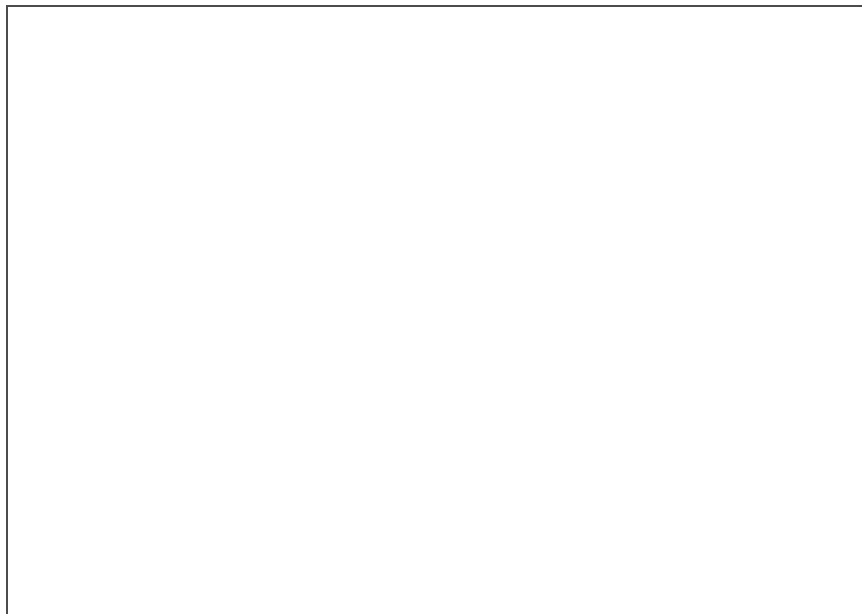


Figure 1. Combined overview of the areas where the Brasschaat Member and the Merksplas Formation are present (according to the G3D-model, available on <http://dov.vlaanderen.be>).

Thickness: May reach a thickness of 30m, but is typically about 15m thick. The largest thickness is observed in the northwest and the northeast, near the Dutch border. The smallest thickness is observed in the central area Rijkvorsel-Hoogstraten-Merksplas.

Age: Lower-Pleistocene

Well logs: The Brasschaat Member can be recognized by its high gamma-ray signal and low resistivity signal. The gamma ray tends to increase towards the top of the Brasschaat Member, while the resistivity often decreases towards the top of this deposit. The base of the Brasschaat Member is characterized by an abrupt increasing resistivity signal due to the transition to the Merksplas Formation. The use of the gamma-ray signal to define the base of the Brasschaat Member can be a little problematic, especially if the Brasschaat Member is positioned directly upon the Lillo Formation. The transition from the Brasschaat Member to the overlying Weelde Formation is characterized by a sudden increase in gamma-ray and an important decrease in resistivity signal.

Examples of clarifying well logs can be found in e.g. 6E135 (DOV kb7d6e-B298, x = 154.850, y = 232.630) Brasschaat Member between 17m and 31m below the surface (Figure 2) and 7E208 (DOV kb8d7e-B49, x = 175.640, y = 233.900) Brasschaat Member between 26m and 38m below the surface.

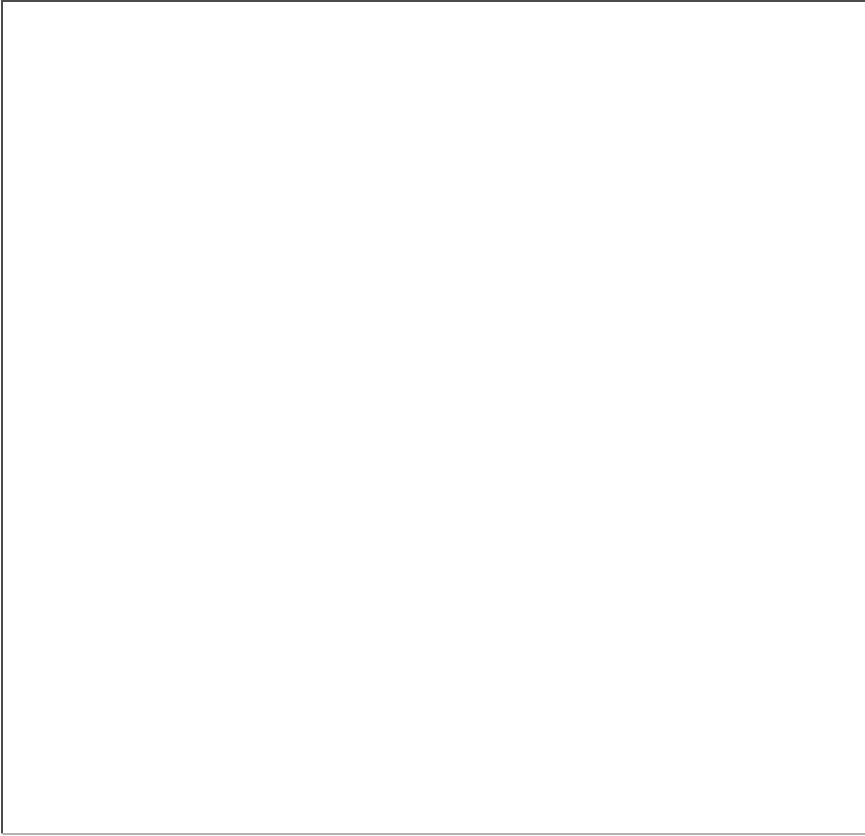


Figure 2. Well log and interpretation of the Kalmthout borehole.

Remarks:

- The term Brasschaat (Brasschaat sands) is used for the first time by Gulinck in 1962.
- Concerning the archives of the Geological Survey of Belgium: in the areas where both the Merksplas Formation and the Brasschaat Member are present, the Brasschaat Member is not termed, it is incorporated in the Merksplas Formation.